

Remarks/Arguments

The Office Action of May 3, 2007 has been carefully reviewed and this response addresses the Examiner's concerns.

I. Status of the Claims

Claims 1-18 are currently pending in this application.

Claims 8-18 are rejected under 35 USC 101 because the claimed invention is directed to nonstatutory subject matter.

Claims 1-2 and 4-18 are rejected under 35 USC 103(a) as being unpatentable over Hirose et al. (US Patent 4,736,441- the '441 patent) in view of Matsumoto et al. US Patent 5,774,584- the '584 patent).

Claim 3 is rejected under 35 USC 103(a) as being unpatentable over Hirose et al. (US Patent 4,736,441- the '441 patent) in view of Matsumoto et al. US Patent 5,774,584-the '584 patent) and further in view of Kahn, P., Kitchen, L., and Riseman, E. M., *A fast line finder for vision-guided robot navigation*, IEEE Transactions on Pattern Analysis and Machine Intelligence 12, 3 (1990), 1098-1102.

Claims 1, 8 and 14 are amended.

Support in the specification for the amendments to the claims

Support for the amendment to Claims 1, 8 and 14, which introduces the following phrase, said line segment data comprising line segment angle data, is found in paragraph 27 of the specification, "Line segment data, including line angle data, is then obtained from the pixel data (step 40, Fig. 1) by conventional means."

II. Amendments to the Specification

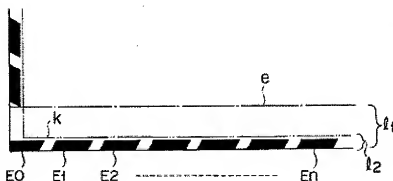
The specification and abstract have been amended to correct typographical errors and numbering inconsistencies between the drawings and the specification.

III. Claim Rejections – 35 USC §103

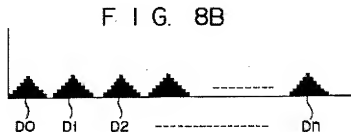
Claims 1-2 and 4-18 are rejected under 35 USC 103(a) as being unpatentable over Hirose et al. (US Patent 4,736,441- the '441 patent) in view of Matsumoto et al. US Patent 5,774,584-the '584 patent).

As the Examiner states, Hirose discloses a reading apparatus that can accurately determine the reverse/obverse of postal material and determine whether the postal material is right side up or upside down, in spite of partial overlapping of an edge mark with marks which are critical to these determinations. Hirose discloses that by scanning the surfaces of each envelope, imaging devices 14 and 15 obtain image data relating to stamp 2, address 4, airmail mark 5, edge mark E, return address 8 and seal 9, etc, referring to figures 1 and 2. In figures 1, 2 and 8A, Hirose defines the edge mark as referring to the entire mark area (see figure 8A of the '441 patent, which is shown below).

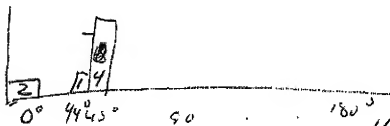
F I G. 8A



In the figure shown above, E0, E1, E2 to En are indicated as denoting the area of the mark. Hirose teaches obtaining histograms related to the area of each mark, E0, E1, E2 to En, intersected by a line located at a distance l_1 from the edge of the envelope. The resulting histograms, shown in figure 8B of the '441 patent, which is shown below,



should be compared to the histograms of the angles of the edges of the marks, an example of which is shown below:



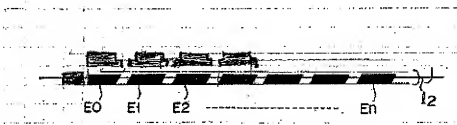
Hirose (the '441 patent) does not teach or disclose or suggest line segment data that comprises line segment angle data, a limitation of amended claim 1, amended claim 8 and amended claim 14. The '584 patent also does not teach, disclose or suggest line segment data that comprises line segment angle data.

The Examiner states that in the process of identifying the location of the plurality of benchmarks from the histogram data, as taught by Hirose in col. 5, lines 30-46, "Edge mark detectors 89, 90 determine whether each repetition rate and/or position $P_{\text{sub}.0}$, $P_{\text{sub}.1} \dots P_{\text{sub}.n}$ of the peak value of the histogram for each edge marking $E_{\text{sub}.0}$, $E_{\text{sub}.1} \dots E_{\text{sub}.n}$ of each edge mark detection area supplied from the respective peak value detectors 87, 88 is within the limits of a characteristic location pattern of a standard edge marking (FIG. 8D) stored in matching tables 89a, 90a. In other words, a match is determined between the location of peak values $P_{\text{sub}.0}$, $P_{\text{sub}.1} \dots P_{\text{sub}.n}$ and the range of coordinates ($P_{\text{sub}.0\text{min}} - P_{\text{sub}.0\text{max}}$, $P_{\text{sub}.1\text{min}} - P_{\text{sub}.1\text{max}}, \dots$) of the characteristic reference edge pattern shown in FIG. 8D. Based on this decision, edge mark detectors 89 and 90 determine whether the period of repetition of the peak

values of the histogram is constant or not. When this period of repetition is determined to be constant and match characteristic reference locations, an edge mark is determined to be present;" is analogous to "identifying a plurality of collinear line segments from the line segment data," a limitation of claim 1.

Applicants respectfully state that, based on the significant difference between the area-based histograms obtained by Hirose (the '441 patent) and the angle-based histograms used to identify the collinear line segments, and based on the fact that the '441 patent does not teach utilizing collinear line segments, the process of identifying the location of the edge marks in the '441 patent from area histograms is not analogous to the process of identifying a plurality of collinear line segments from the line segment data. Furthermore, Applicants respectfully state that the purported analogy is not based on "substantial evidence."

As the Examiner states, Matsumoto (the '584 patent) teaches an image processing method which can identify ruled lines which construct a table. In the method taught by the '584 patent histograms from the image area are generated in the horizontal or vertical direction and using the peak position coordinates of the histograms, intersected lines identified. Applying the teachings of the 584 patent to the edge mark image of the 441 patent (figure 8A), the following result is obtained, shown in the figure below.



The intersections of the centers of the vertical and horizontal histograms would be at one point roughly in the center of each of the edge marks. Such information would not be useful to determine "the distance from the edge of the envelope to the average or maximum value of each mark" in order to determine a distance from the edge of the envelope in which "no edge mark is included." Such a determination is necessary in order to "provide a reading apparatus that can accurately determine the reverse/obverse of postal material and determine whether the postal

material is right side up or upside down, in spite of partial overlapping of an edge mark with marks which are critical to these determinations," the purpose for which the invention this close in the '441 patent is intended for.

Since combining the teachings of the '584 patent with the teachings of the 441 patent renders the 441 patent unsuitable for the purpose it was intended for, the '584 patent teaches away from the combination. "If when combined, the references "would produce a seemingly inoperative device," then they teach away from their combination. In *re* Sponnoble, 56 C.C.P.A. 823, 405 F.2d 578, 587, 160 U.S.P.Q. (BNA) 237, 244 (CCPA 1969); see also *In re Gordon*, 733 F.2d 900, 902, 221 U.S.P.Q. (BNA) 1125, 1127 (Fed. Cir. 1984) (finding no suggestion to modify a prior art device where the modification would render the device inoperable for its intended purpose)" (as cited in *Tec-Air Inc. v. Denso Manufacturing*, 192 F.3d 1353, 1360 (fed. Cir. 1999).

Applicants respectfully state that a prima facie case of obviousness has not been established since the prior art does not teach all the limitations of claim 1, 8 or 14, and the prior art teaches away from the combination.

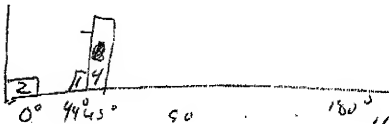
Claims 2-7 are dependent on claim 1, Claims 9-13 are dependent on claim 8 and claims 15-18 are dependent on claim 14. Therefore, Applicants respectfully state that a prima facie case of obviousness has not been established for claims 1-2 and 4-18..

Claim 3 is rejected under 35 USC 103(a) as being unpatentable over Hirose et al. (US Patent 4,736,441- the '441 patent) in view of Matsumoto et al. US Patent 5,774,584-the '584 patent) and further in view of Kahn, P., Kitchen, L., and Riseman, E. M., A fast line finder for vision-guided robot navigation, IEEE Transactions on Pattern Analysis and Machine Intelligence 12, 3 (1990), 1098-1102.

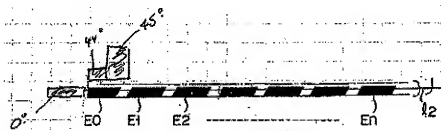
The Examiner suggests grouping pixels based on gradient detection (angular ranges) using the fast line finder of the article cited above. The Examiner states that it would have been obvious to one of ordinary skill in the art to group pixels on gradient direction as taught by Kahn et al.

applicants respectfully state that Kahn et al do not teach grouping pixels based on gradient direction but rather teach how to compute gradient directions and magnitude, how to coarsely quantized the gradient direction into buckets (see figure 1 of Kahn et al.), which, as can be seen from figure 1 of Kahn et al, is different from obtaining a histogram.

Furthermore, assuming arguendo, that a histogram based on gradient duration is obtained, the histogram would be similar to the one shown in the second figure above, which is repeated below:



Using that histogram in the teachings of the '441 patent in view of the '584 patent, would result in the following figure,



Applicants respectfully state that such a combination renders the '441 patent unsuitable for the purpose was intended for, and therefore Kahn et al. teach away from the combination. Applicants respectfully state data prima facie case of obviousness has not been established.

IV. Claim Rejections – 35 USC §101

Claims 8-18 are rejected under 35 USC 101 because the claimed invention is directed to nonstatutory subject matter.

Applicants respectfully state that claim 8 is directed to a system for identifying features on an item and that such a system is well within the statutory classification. Applicants

recognize, although Applicants do not agree for the reasons that will be stated below, that the present training for examiners states that signals *per se* are not statutory. However, claim 8 is not a claim to a signals *per se*. Applicants respectfully refer the Examiner to section 2106.01 of the MPEP. In that section, referring to the fact that computer codes *per se* are not statutory, it is stated that:

Computer programs are often recited as part of a claim. USPTO personnel should determine whether the computer program is being claimed as part of an otherwise statutory manufacture or machine. In such a case, the claim remains statutory irrespective of the fact that a computer program is included in the claim. The same result occurs when a computer program is used in a computerized process where the computer executes the instructions set forth in the computer program. Only when the claimed invention taken as a whole is directed to a mere program listing, i.e., to only its description or expression, is it descriptive material *per se* and hence nonstatutory.

Applicants respectfully state that claims 8-13 are directed to statutory subject matter. Regarding claims 14-18, the following arguments are presented regarding the statutory nature of computer usable medium, including carrier waves. The Examiner states that a carrier wave is nonstatutory since it is merely a form of energy. The Examiner does not cite a section of the MPEP that states that a carrier wave, such as used in a network like the Internet, and embodying a computer readable code that can cause a computer to produce useful effects (such as considered in *In re Lowry* and in *In re Beauregard*) is not statutory. The proposed interim guidelines stated that:

from a technological standpoint, a signal encoded with functional descriptive material is similar to a computer-readable memory encoded with functional descriptive material, in that they both create a functional interrelationship with a computer. In other words, a computer is able to execute the encoded functions, regardless of whether the format is a disk or a signal.

“The patentability of signals is not a new concept. The Supreme Court found a claim covering a signal patentable subject matter in 1854 when it upheld such a claim of Samuel Morse’s telegraph patents. See *O’Reilly v. Morse*, 56 U.S. 62 (1854).”

(“I claim as my invention the system of signs consisting of dots and spaces and of dots, spaces and horizontal lines for numerals, letters, words or sentences substantially as herein set forth and illustrated for telegraph purposes”).

"A signal is also the result of a physical transformation analogous to that found patentable in *Diamond v. Diehr*, 450 U.S. 175 (1981). Electromagnetic energy is transformed from a natural state or some intermediate state to form a data signal. Such a signal is physically different and has undergone a physical transformation from its original state. The key factor is that a physical transformation has occurred - not the extent of the transformation. The resulting signal is the product of a physical transformation which would not exist absent the transformation." (IBM comments on the proposed interim guidelines available at <http://www.uspto.gov/web/offices/pac/dapp/opla/comments/ab98/ab98.html>).

The Federal Circuit Court has stated that "The view that 'there is nothing necessarily physical about 'signals'' is incorrect." *Arrhythmia Research Tech. Inc. v. Corazonix Corp.*, 958 F.2d 1053, 1059 (Fed. Cir. 1992). (Quoting *In re Taner*, 681 F.2d 787, 790, 214 USPQ 678, 681 (CCPA 1982)). Applicants respectfully state that the Examiner statements are not supported by the MPEP and contradict the position stated by the courts.

The fact that signals are physical phenomena capable of being changed and transformed has been accepted by the scientific community for about a century. As Professor A. Zee stated in the introduction to RP Feynman's book QED, "the photon is the most visible of other elementary particles." (R. P. Feynman, QED, introduction to the 2006 edition, ISBN 978-0 - 681-12575-6). An electromagnetic signal that carries information is a stream of photons that has been modulated in order to impart to the stream the desired information. The modulation is the transformation of the unmodulated stream into a different state in order to produce a useful result. For example, in wireless transmission, the stream of photons is modulated in order to carry information such as voice or data; in distributed computing systems, the stream of photons is modulated in order to have a computer usable code embodied therein which causes the computer to carry out definite instructions. Both of these applications satisfy the requirements stated in the MPEP for a statutory invention.

Since signals have been deemed statutory by the courts and since one of ordinary skill in the art will recognize that signals, specially electromagnetic signals such as carrier waves, have their

physical characteristics required for a statutory invention, the claimed invention of claim 21 is statutory.

Can an equivalent of a statutory subject matter be non-statutory? Not allowing a claim reciting a signal encoded with functional descriptive material, similar to a computer-readable memory, encoded with functional descriptive material, and creating a functional interrelationship with a computer, in In re Beauregard form as statutory subject matter would allow others who presented computer readable medium claims before the mid-1990s to capture a signal encoded with functional descriptive material, similar to a computer-readable memory, encoded with functional descriptive material, and creating a functional interrelationship with a computer under their claims while denying the same to the Applicant.

As the guidelines state, a carrier wave having computer readable code embodied therein serve the same purpose, creating a functional interrelationship with a computer, as a computer readable memory. Also, carrier wave having computer readable code embodied therein perform the same purpose in the same way as a computer readable memory having computer readable code embodied therein; both carry bits of information and both behave like communication channels (see for example, Wolf, J.K.; Magnetic recording as a communications channel. 1994 IEEE International Symposium on Information Theory, 1994. Proceeding, 27 June-1 July 1994 Page(s):5 or Moon, J Signal-to-noise ratio definition for magnetic recording channels with transition noise.; IEEE Transactions on Magnetics, Volume 36, Issue 5, Part 2, Sept 2000 Page(s):3881, 3883). The carrier wave having computer readable code embodied therein obtains is the same result, to enable a computer to provide a useful result by executing the code, as a computer readable memory having computer readable code embodied therein.

An accused device may infringe a patent either literally or under the Doctrine of Equivalents. To literally infringe a patent claim, the product at issue must include each and every element of the claim. *Builders Concrete, Inc v. Bremerton Concrete Products*, 757 F.2d 255, 257 (Fed. Cir. 1985) Failing to meet the standards established for demonstrating a prima-facie case of literal infringement, the analysis then proceeds to another theory of infringement. When literal

infringement is obviated by failure to comply with criteria established by the United States Supreme Court and the U.S. Court of Appeals for the Federal Circuit, attention must turn to the Doctrine of Equivalents. This doctrine seeks to protect patent owners by discouraging potential infringers from competing by making unimportant and insubstantial changes to a product covered by a patent claim..

The Doctrine of Equivalents seeks to protect patent owners by discouraging potential infringers from making "unimportant and insubstantial changes" to a patent which "though adding nothing, would be enough ... [to evade] the reach of the law." *Graver Tank & Mfg. Co. v. Linde Air Products Co.*, 339 U.S. 605, 606, 70 S.Ct. 854, 856, 94 L.Ed. 1097 (1950). The doctrine may result in a virtual expansion of the scope of a patentee's claims in certain circumstances where, although it is shown that the literal language of a claim's elements is not met by an accused product, it may be proven that the accused product, analyzed on an element by element basis, "performs substantially the same overall function or work, in substantially the same way, to obtain substantially the same overall result as the claimed invention." *Pennwalt Co. v. Durand-Wayland Inc.*, 833 F.2d 931, 934 (Fed. Cir. 1987).

Therefore, infringement under the Doctrine of Equivalents requires that each corresponding element of the accused apparatus, device, composition or process, that is not literally met by a limitation of a claim. performs substantially the same function in substantially the same way to yield the same, or substantially the same, result as each corresponding limitation of the claim. *Graver Tank & Mfg. Co., Inc. v. Linde Air Products, Co.*, 339 U.S. 605; *Perkin-Elmer Co. v. Computervision Corp.* 732 F.2d 888, (Fed. Cir. 1984), *cert. denied*, 469 U.S. 857 (1984); *Pennwalt Co. v. Durand-Wayland, Inc.*, 833 F. 2d at 934 (Fed. Cir. 1987), *cert. denied*, 485 U.S. 961 (1988), and *cert. denied*, 485 U.S. 1009 (1988).

As stated above, a claim allowed before the mid-1990s reciting a computer usable memory having computer readable code embodied therein would protect against an infringing product utilizing a carrier wave (such as the Internet) to perform the same function since such a product would infringe on their the doctrine of equivalents. Since the carrier wave is an after developed

technology, the limitations of the doctrine of equivalents placed by *Festo* and preceding cases may not apply.

Therefore, the proposed guidelines would render coverage of claims depending on when the claim was written. Furthermore, the proposed guidelines present a situation where, if the applicant does not explicitly list that a carrier wave is a computer usable medium, a claim for a computer usable medium, which is identical to the claims in *In re Beauregard* would protect against products using a carrier wave to embody computer readable code by means of the doctrine of equivalents while applicants who are more explicit in their definition of a computer usable medium would have their claims restricted and therefore would not have access to the doctrine of equivalents under *Festo*.

Therefore, the interpretation of the statute promulgated by the proposed guidelines would tend to unfairly prejudice applicants who tend to be open in their descriptions while favoring applicants who tend to limit their descriptions to avoid the proposed guidelines. Such a purpose would be counter to the constitutional mandate that serves at the basis for the patent system.

Based on the above, Applicant respectfully states that, under proper interpretation of the statute and following the constitutional mandate that serves as a basis for the patent system, a claim reciting a signal encoded with functional descriptive material, similar to a computer-readable memory, encoded with functional descriptive material, and creating a functional interrelationship with a computer, in *In re Beauregard* form is statutory subject matter.

The Cross Border Infringement Issue

In *NTP Inc. v. Research in Motion, Inc.*, 418 F.3d 1282, 75 USPQ 2d 1763 (Fed. Cir. 2005) it was well explained that the steps of utilization of the Blackberry® system occurring partially in Canada did not infringe method claims of the patents in suit but that such usage did infringe apparatus (system) claims. 75 USPQ 2d at 1786-93. Nor did the defendant (nor customers of defendant induced by defendant) infringe by “exports” of text and voice message encoded signals to Canada under 35 U.S.C. § 271(f) [75 USPQ 2d at 1793-94] nor commit import of product-by-process infringement under 35 U.S.C. § 271(g) [75 USPQ 2d at 1794-95].

Since under *NTP v RIM* methods claims do not provide protection against extra-territorial infringers, Applicant's protection would only be based on the system claim that is practiced by the user not the extra-territorial provider of the software.

On the other hand in *Eolas Tech Inc. v. Microsoft Corp.*, 399 F.3d 1375, 73 USPQ 2d 1782 (Fed. Cir. 2005) and *AT&T Corp. v. Microsoft Corp.*, 414 F.3d 1366, 75 USPQ 2d 1506 (Fed. Cir. 2001) shipment of software on disks and indeed on a master disk and also as signals to Europe to be copied, with copies to be bundled with European made, sold, used computers did infringe a U.S. patent under the 35 U.S.C. § 271(f) export provisions.

A petition for *Certiori*, in *AT&T Corp. v. Microsoft Corp.*, was granted October 28, 2006 and Federal Circuit decision was reversed on other grounds. *Microsoft v. ATT*, 550 U. S. ____ (2007), Decided April 30, 2007. As stated in the U.S. Supreme Court decision, "Until it is expressed as a computer-readable .copy., e.g., on a CD-ROM, Windows software indeed any software detached from an activating medium remains uncombinable." *Id*.

The patent in question in *ATT v. Microsoft*, RE32580, was re-issued in 1988 before the *In re Lowry* and in *In re Beauregard* decisions and therefore does not have a *Beauregard* type claim. A *Beauregard* type claim would have avoided the controversy since, in claiming the software as being embodied in a computer readable medium (copy), the master disk (or the signal transmission, using the Federal Circuit statement) would have been the claimed invention and Microsoft would have been shipping an infringing product.

Under the proposed Interim guidelines, transmission of software overseas to be bundled with a European made computer would not infringe. Therefore, the proposed Interim guidelines permit "a technical avoidance of the statute by ignoring the advances in a field of technology." Also, the proposed guidelines place form over substance allowing infringers to use this form over substance guidelines to infringe without consequence.

In this new reality created by advances of technology and consequently changed business practices it is essential to U.S. (and foreign) patentees of software focused inventions to fully claim their inventions (when their inventions are within a scope legitimized (as here) by proper written description,, enabling disclosure, best mode presentation, utility and avoidance of anticipation/obviousness in relation to prior art). It is also legitimized by the reality of the science itself that shows a carrier signal [see the references in the Appendix hereto, discussed above] is carried by a communication channel which is the same manner as a magnetically or optically readable disc. Indeed a carrier signal program is more directly accessible than the same program on a tape or disc (or an electronic flash memory in one of its stable states).

For the reasons stated above, Applicants respectfully state that the claimed invention of claim 14 is statutory. Claims 15-18 are dependent on claim 14 and, therefore, are also statutory.

V. Conclusion

Applicants respectfully submit that the above claims and remarks clearly establish the patentability of the claimed invention over the prior art. Favorable consideration and allowance are earnestly solicited. No fee is required, however the Commissioner for Patents is hereby authorized to charge any deficiencies to or credit any overpayment to Deposit Account No. 03-2410, Order No. 12078-195.

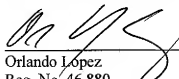
The following information is presented in the event that a call may be deemed desirable by the Examiner:

ORLANDO LOPEZ (617) 345-3000.

Respectfully submitted,
Daniel R. Paquette et al., Applicants

Dated: July 18, 2007

By:


Orlando Lopez
Reg. No. 46,880
Attorney for Applicants